

UNDERGRADUATE ENROLLMENT TRENDS IN NATURAL RESOURCES AT NAUFRP INSTITUTIONS: AN UPDATE

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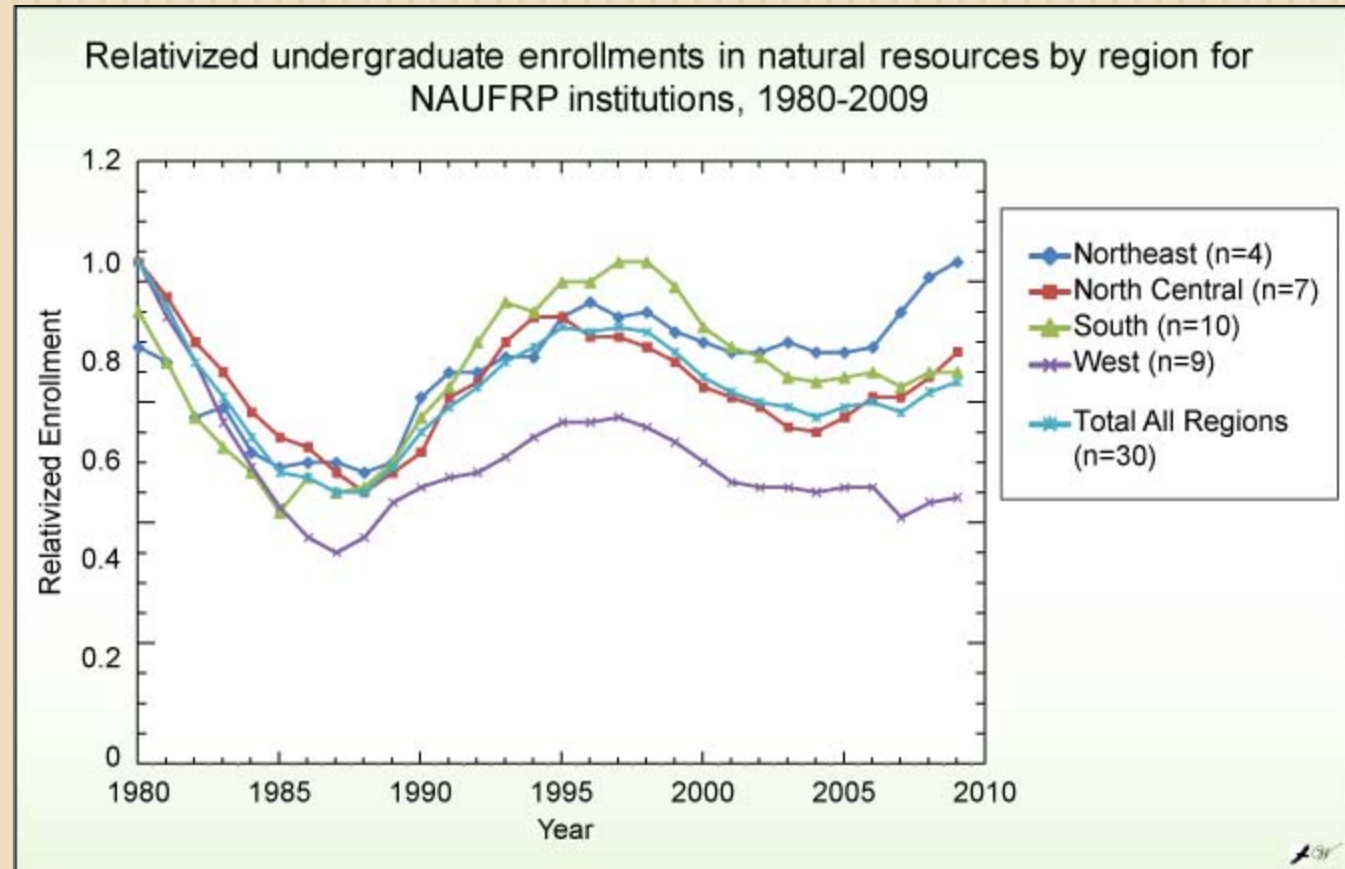
Robert J. Lilieholm



8th Biennial Conference on University Education in Natural Resources
Blacksburg, VA, March 26, 2010

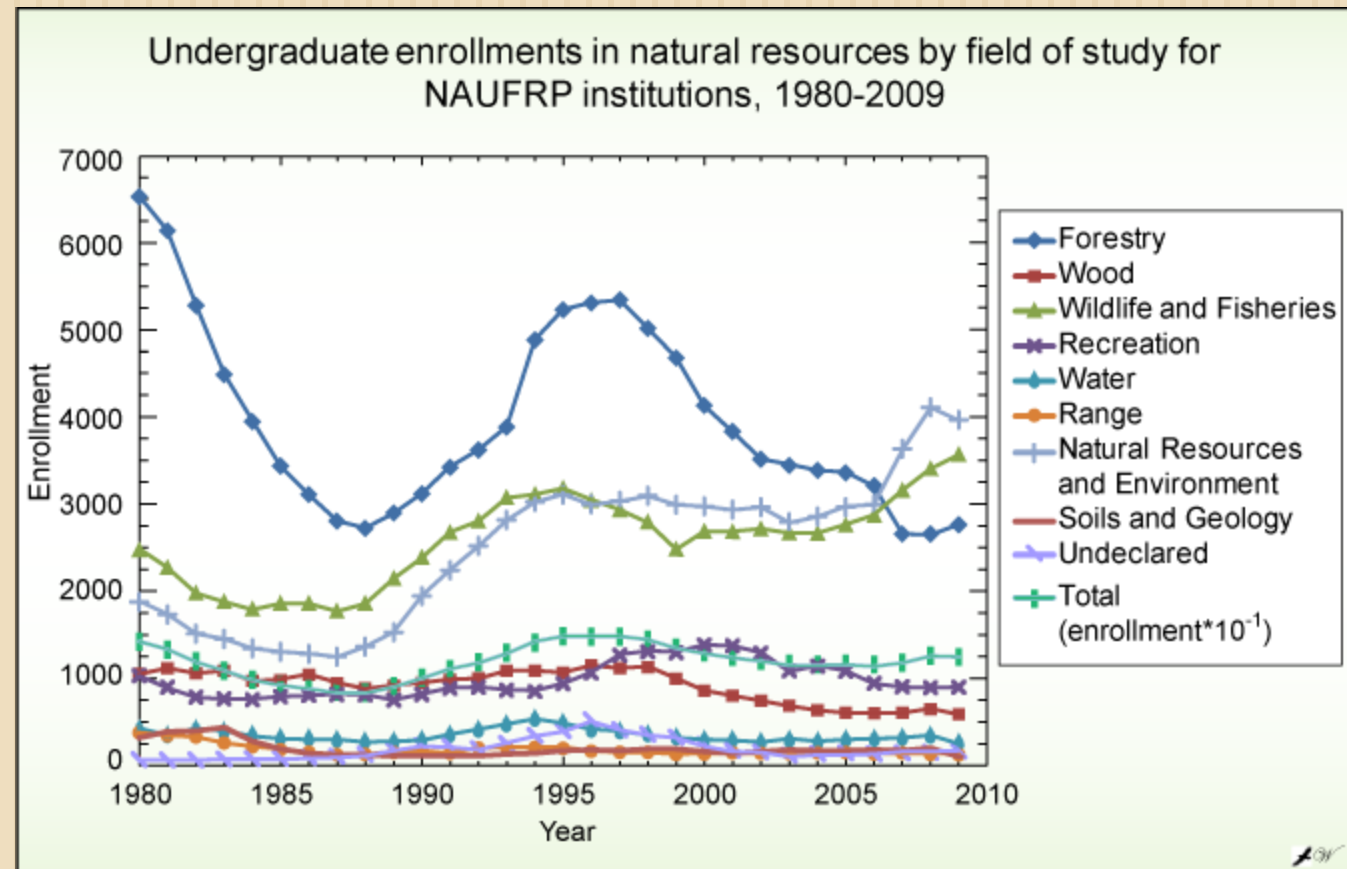
Undergraduate Enrollments in Natural Resources by Region for NAUFRP Institutions, 1980-2009

- Similar trends across all regions
- Peaks in early 1980s & mid 1990s
- Increasing since 2003-2004
- Overall decrease of 13% since 1980

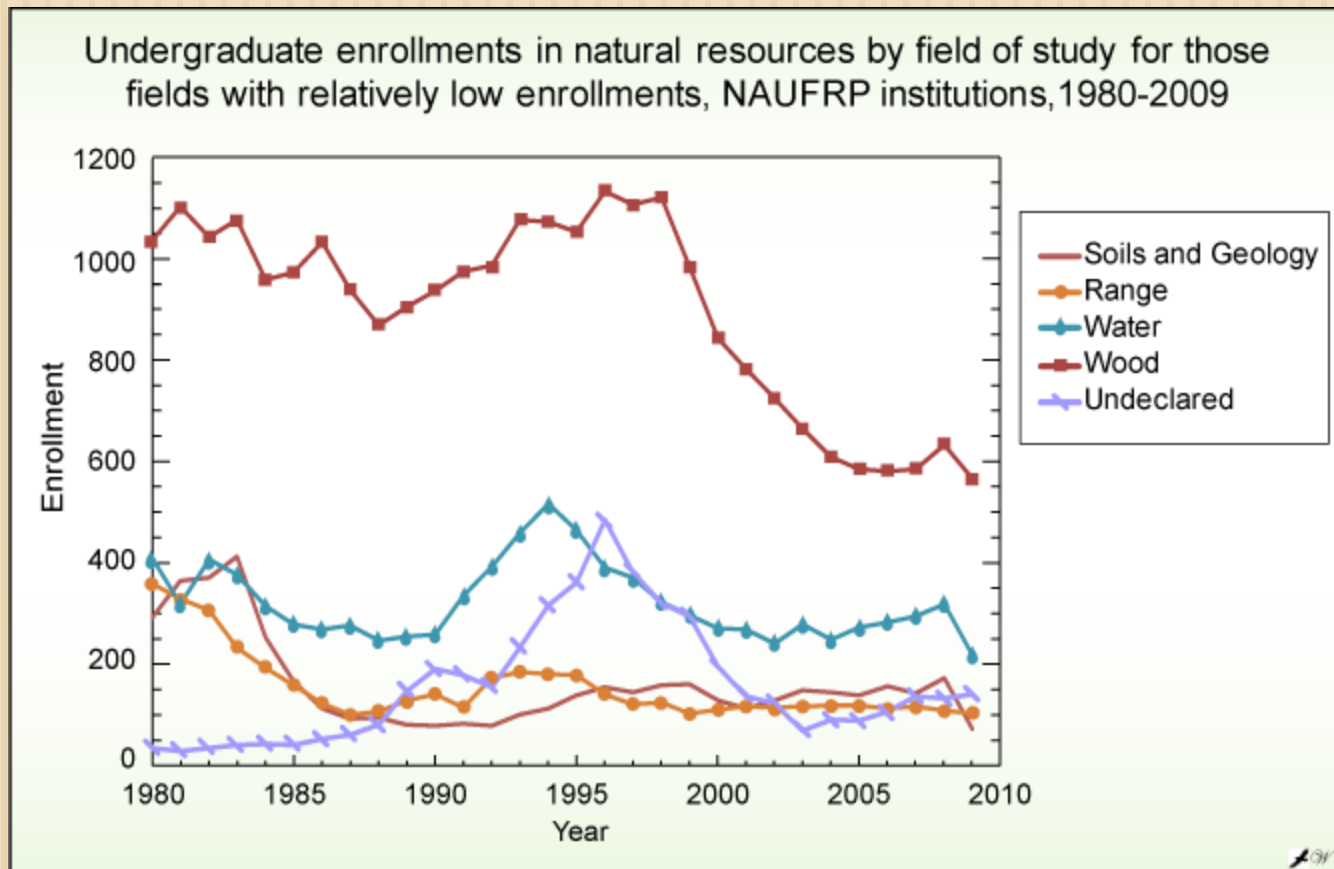


Undergraduate Enrollments in Natural Resources by Field of Study for NAUFRP Institutions, 1980-2009

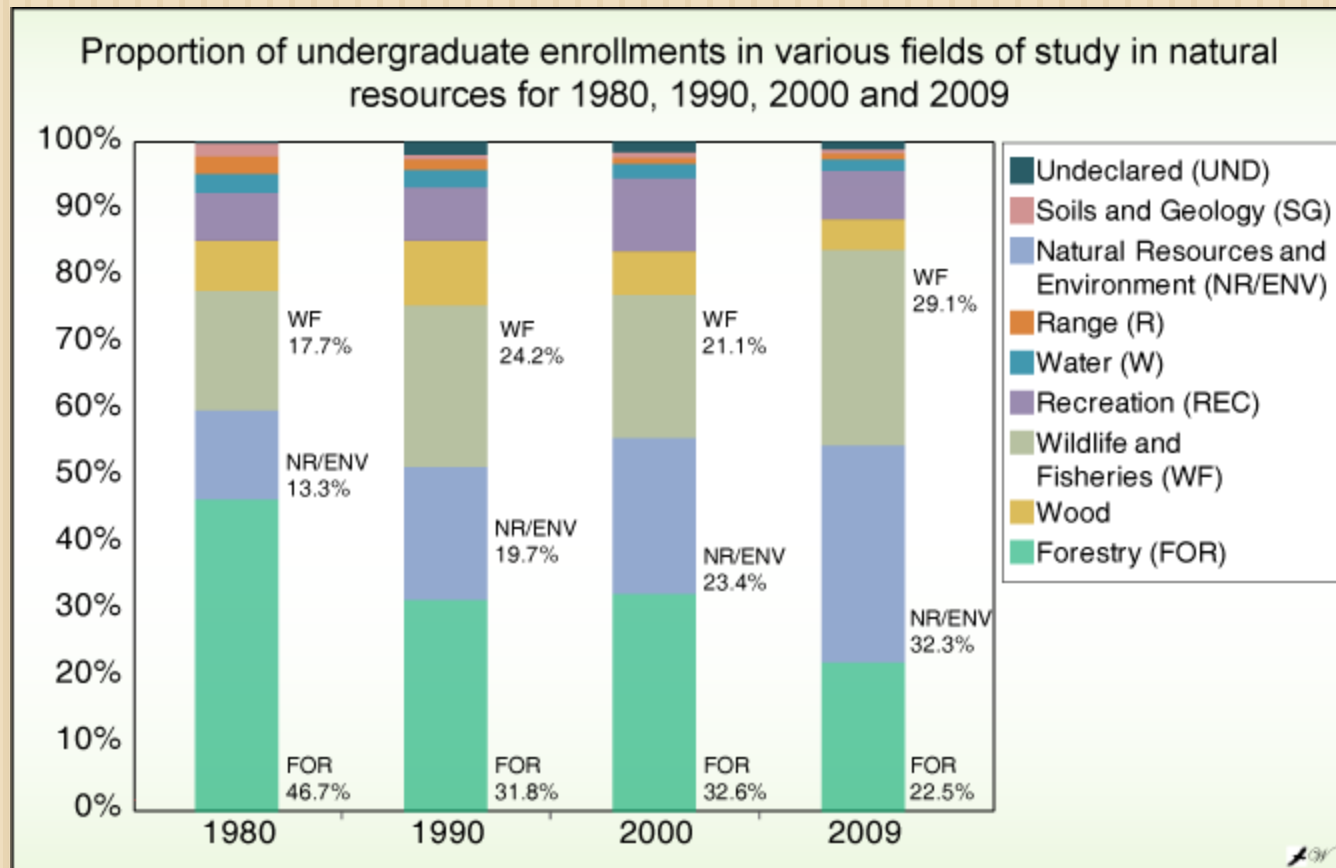
□ “Natural Resources & Environment” eclipsing more traditional programs



Undergraduate Enrollments in Low-enrollment Fields, NAUFRP Institutions, 1980-2009



Proportion of Undergraduate Enrollments by Field of Study



Degree Classifications

- ❑ **Forestry** (forestry, forest science, forest ecosystem science, forest resources, forest management, urban forestry, forest engineering/operations)
- ❑ **Wood Science/Products** (wood science, wood products, wood technology, forest products, paper science)
- ❑ **Fisheries & Wildlife**
- ❑ **Recreation** (recreation, tourism, parks, interpretation, communications)
- ❑ **Watershed Science/Management** (watershed science, watershed management, hydrology)
- ❑ **Range Science/Management** (range science, range management, rangeland resources)
- ❑ **Natural Resources/Environmental Management** (natural resources management; planning, policy, and economics; environmental management and science; environmental conservation; environmental studies; conservation management; conservation biology; restoration ecology/management; applied ecology; geography)
- ❑ **Soils & Geology**
- ❑ **Other** (landscape architecture, GIS, land surveying, spatial science, biotechnology, etc.)
- ❑ **Undeclared**

Range & Frequency of NRE Degree Names at NAUFRP Institutions (B.S. & Masters), March 2010

Natural Resources/Management/Studies

Natural Resources (17)

Natural Resources Management (7)

Natural Resources Ecology & Management (1)

Natural Resources Science & Management (1)

Natural Resources Development (1)

Natural Resource Studies (1)

Natural Resources Stewardship (1)

Natural Resources & Environment

Natural Resources & Environmental Management (1)

Natural Resources & Environmental Science (1)

Environmental Resource Management (1)

Environmental & Natural Resources (1)

Environmental Science & Resource Management (1)

Environmental Science/Management/Studies (34)

Natural Resources & Conservation

Natural Resources Conservation (1)

Natural Resources Conservation & Management (1)

Resource Conservation (2)

Resource Conservation & Restoration Ecology (1)

Conservation & Resource Studies (1)

Conservation & Environment

Forest Conservation & Environmental Studies (1)

Environmental Conservation Studies (1)

Ecology & Environment/Natural Resources/Conservation

Applied Ecology & Environmental Studies (1)

Conservation & Restoration Ecology (1)

Ecosystems

Ecosystem Management (1)

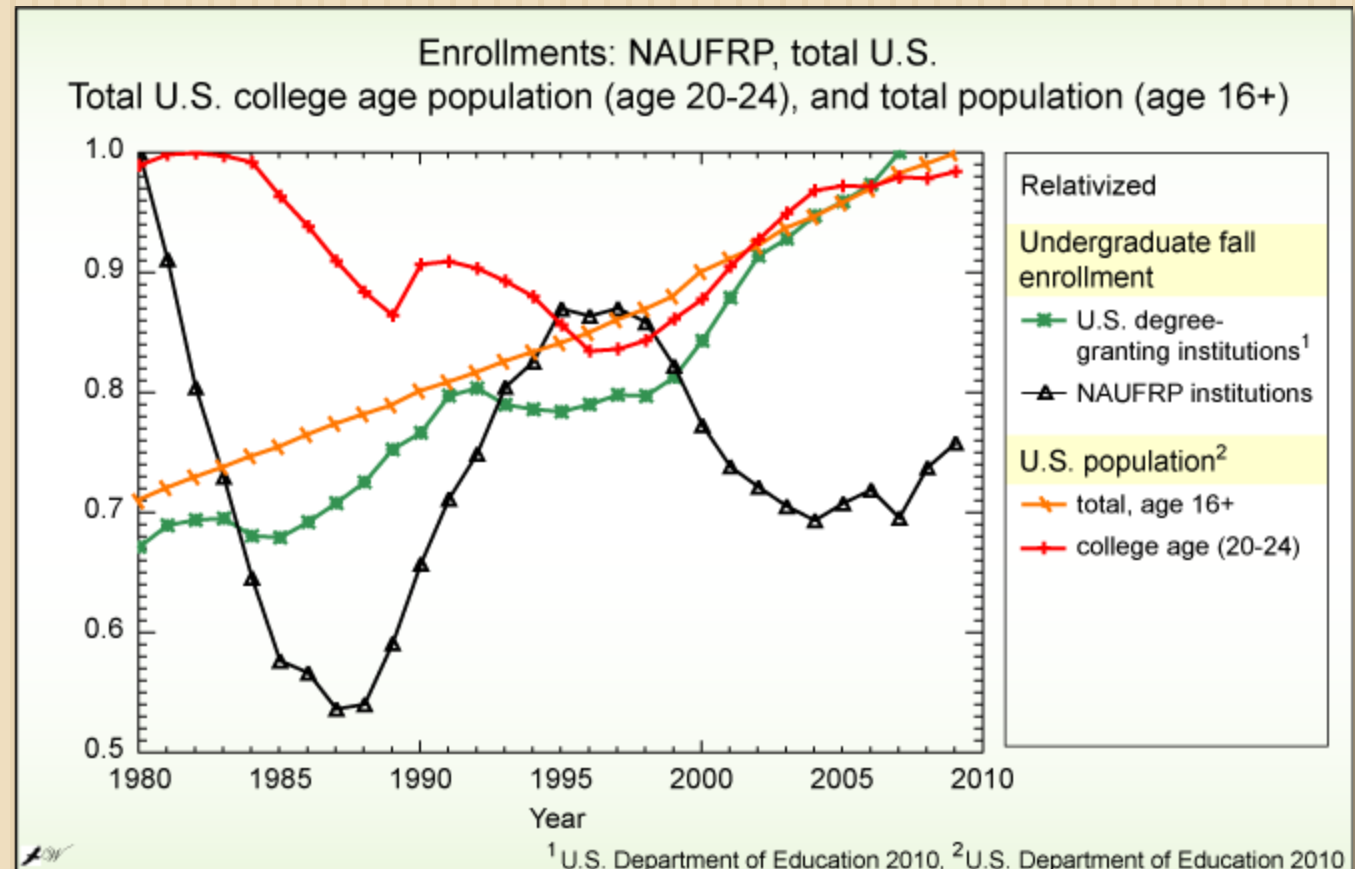
Terrestrial Ecosystems (1)

Forest Ecosystem Science & Conservation (1)

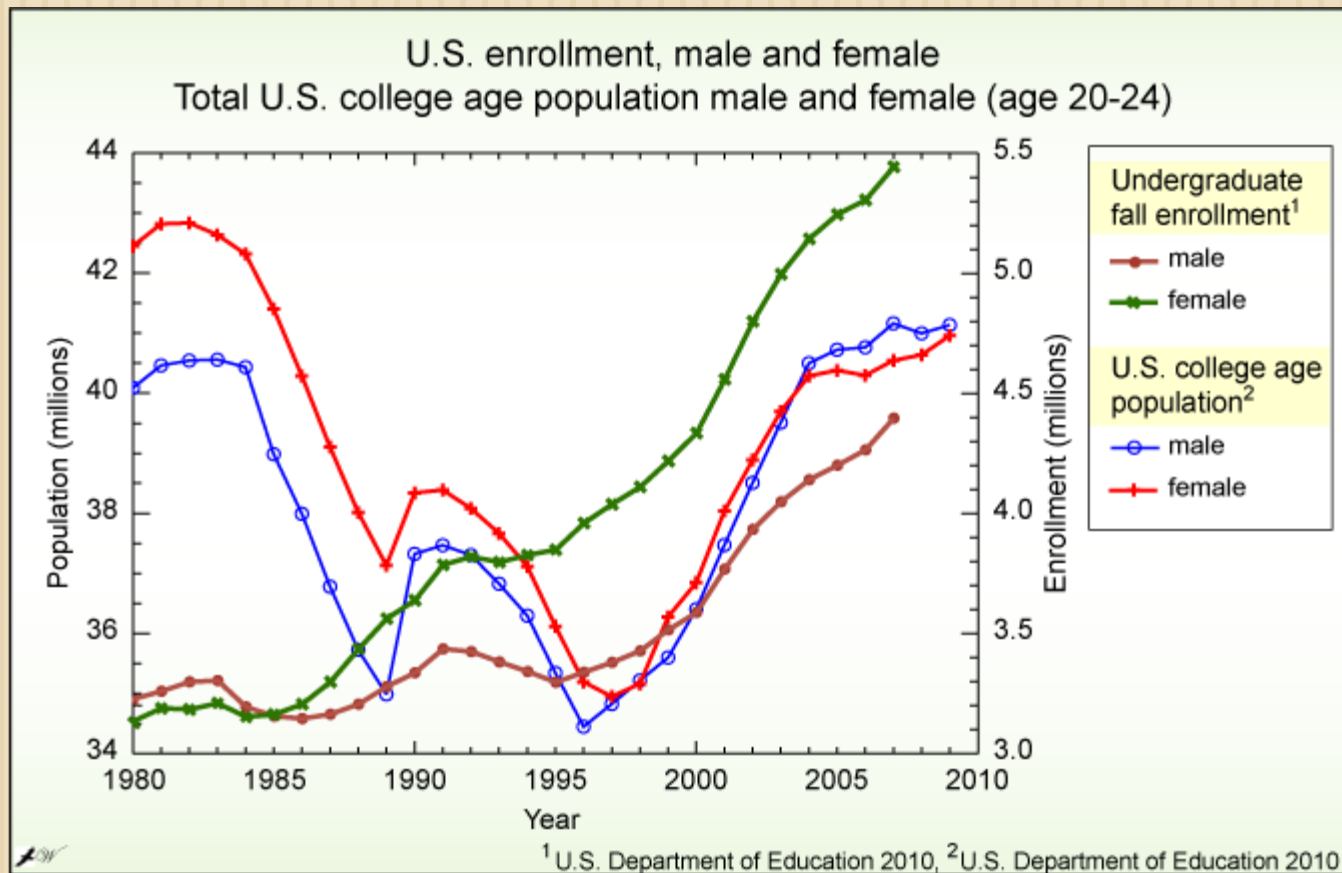
Ecosystem Science (1)

Factors affecting Overall Trends in Natural Resource Enrollments

- Complex (multivariate)
- Trends differ from overall higher ed enrollments (which track college age population)

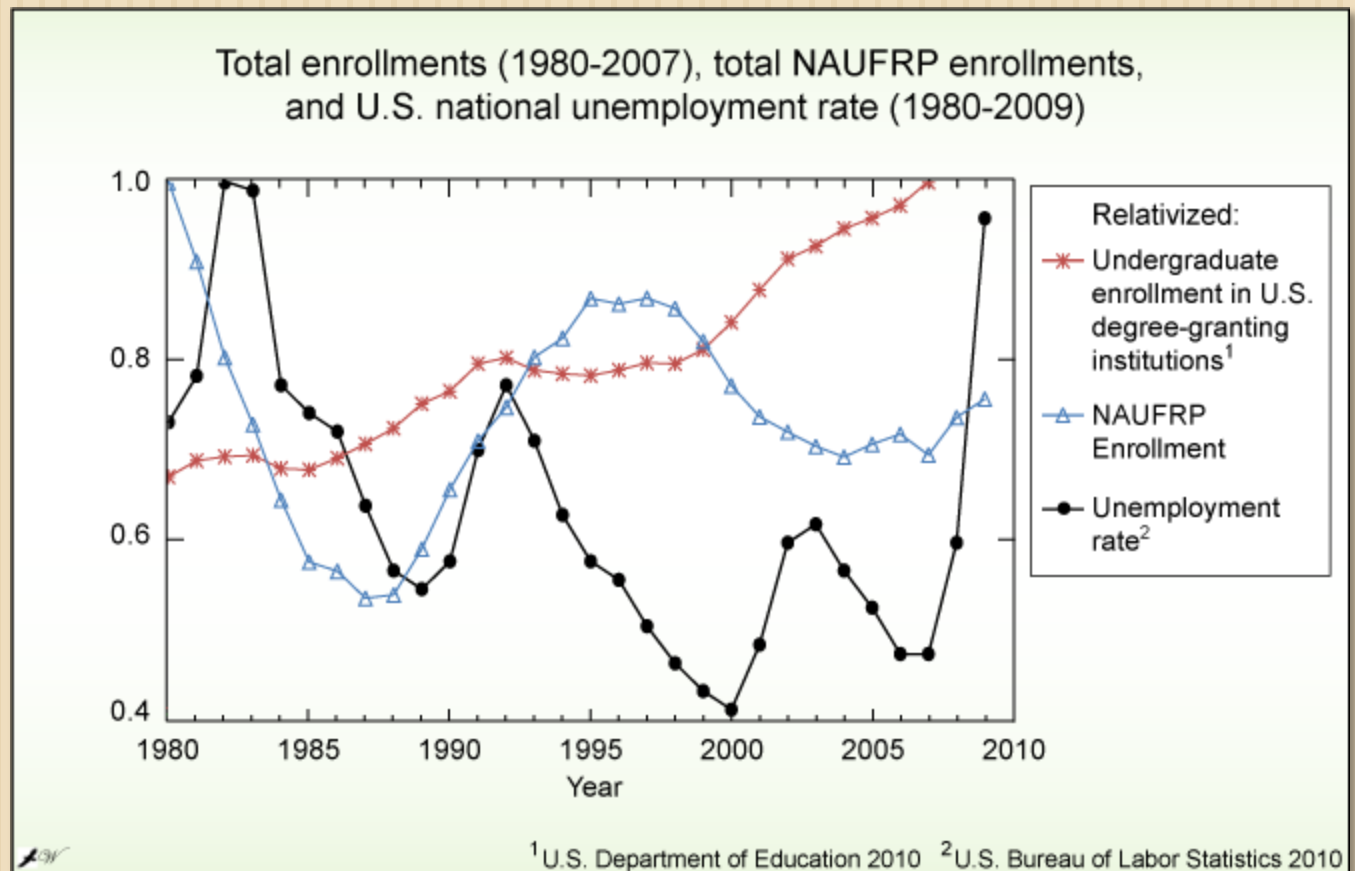


Gender and Enrollment



Enrollment & Unemployment

Enrollment trends may be associated with larger trends in the economy...



Possible Reasons for 1995-2003 Decline in Natural Resource Enrollments

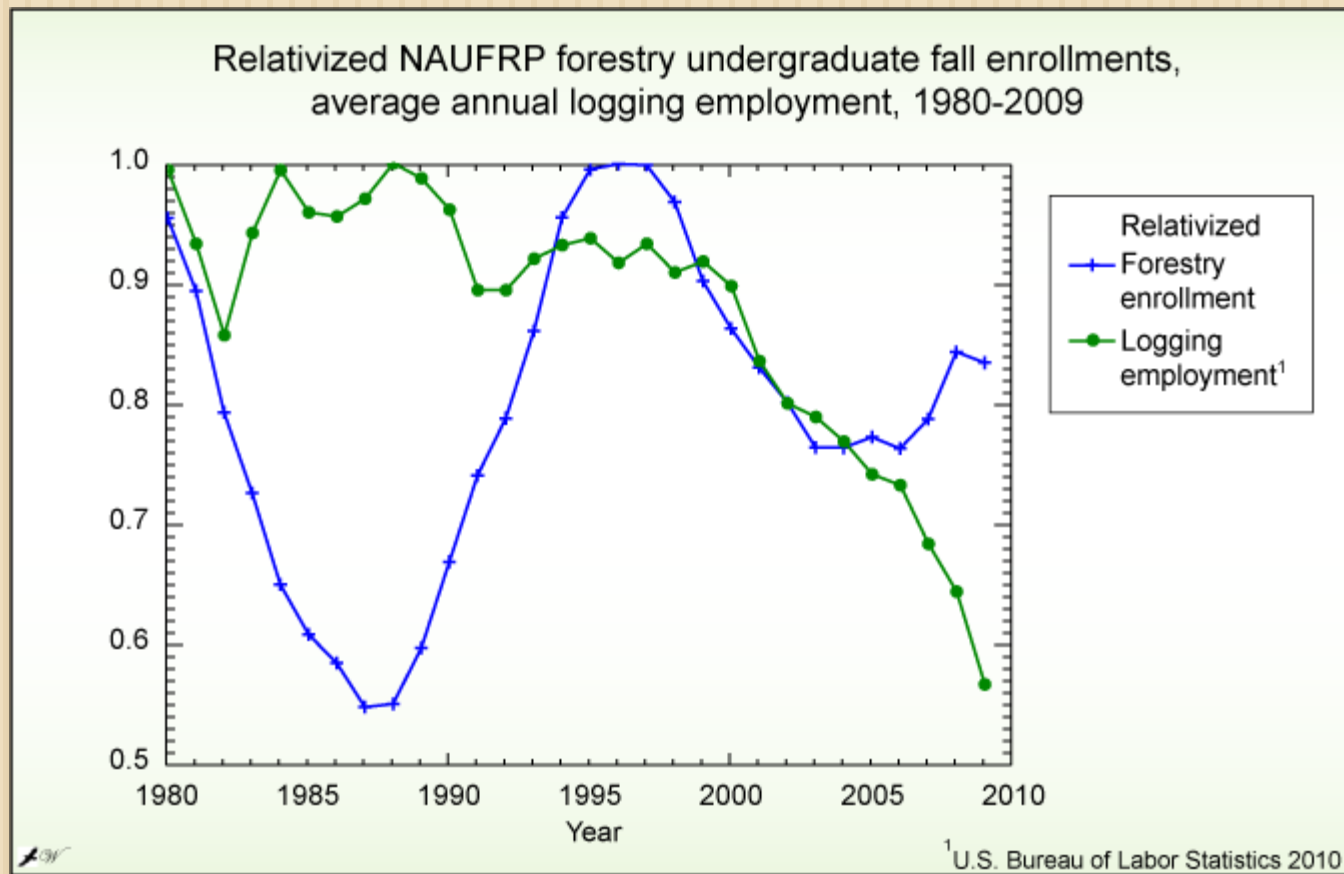
1. Weak & uncertain job market
2. Low salaries compared to other professions
3. Increasing “disconnect” between natural resources & an urbanizing society (especially among young adults)
4. Tendency of minorities to avoid academic programs perceived as tangential to important issues affecting their communities
5. Negative public perceptions of forestry & related natural resource professions
6. Perception of curricula being too narrow & rigid
7. Increased “science phobia” on the part of students
8. Increasing number of similar degree programs outside colleges of forestry & natural resources
9. Relatively long period beyond a B.S. degree needed to obtain a terminal professional degree
10. Lack of intellectual leadership & charisma nationally in forestry & related natural resources areas
11. Limited public awareness regarding social benefits of forestry & related natural resource professions
12. Decreasing enrollments in colleges & universities overall (Sharik et al. 2004, Sharik 2005)

Surveys of undergraduate forestry students lend some support for hypotheses 1, 2, 5, 7 & 11 (Sharik & Frisk 2008, 2010).

Reasons for Especially Sharp Declines in Forestry Enrollments

- Diversification of degree offerings in Natural Resources Colleges due to:
 - Changing public values towards forests (shift from utilitarian/economic view, to a broader array of ecosystem values) (Xu & Bengston 1991, MEA 2005)
 - Association of forestry with the utilitarian/economic perspective (Wellman 1987, Luckert 2006, Sharik & Frisk 2008 and 2010)
 - Inflexible curricula bound by accreditation standards compared to other natural resource fields
 - Declining harvest levels on National Forests – a resource typically managed by foresters

Forestry Enrollments & Logging Employment



Conclusions

- Enrollments have varied significantly across time, but overall have decreased since 1980
- Trends experienced across all U.S. regions
- Reasons for changes in NR enrollments over time are complex, likely involving a number of demographic, economic & social factors
- NAUFRP institutions and public & private sector employers need a better understanding of the factors affecting:
 - ▣ Undergraduate & graduate enrollments
 - ▣ Job & career opportunities, both now and over the long-term

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Acknowledgements

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